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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

OFFICIAL

In re the Application of

Inventor(s): Hiroaki SUDO et al.

Art Unit: 2634

ApplN. No.: 09/582,558

Examiner C. Odom

Filed: June 29, 2000

For: APPARATUS AND METHOD FOR TRANSMISSION/RECEPTION

PETITION TO MAKE SPECIALAssistant Commissioner of Patents  
Washington, DC 20231

Sir:

The Applicants respectfully petition that the above-captioned application be granted special status. The requirements of MPEP section 708.02(VIII) are complied with as follows:

(1) Please charge the petition fee set forth in 37 CFR 1.17(i) to Deposit Account No. 19-4375.

(2) All pending claims (claims 13-18) of the present application are believed to be directed to a single invention; if the Office determines that all the claims presented are not obviously directed to a single invention, the Applicants agree to make an election without traverse as a prerequisite to the grant of special status.

(3) A pre-examination search has been made, and an Information Disclosure Statement directed thereto is attached. The field of search is:

Class 375, subclasses 130 and 298;

Class 340, subclasses 7.59, 825.5 and 825.51; and  
Class 714, subclasses 755 and 756.

Examiners Joseph Torres, Stephen Chin, Michael Horabik, Ed Holloway and Stephen Baker were consulted for the field of search.

In addition, further pre-examination searches are based on the PCT International Search, and Korean Office Actions dated March 28, 2002 and September 17, 2002, the results of which are of record in the form of Information Disclosure Statements filed June 29, 2000, May 13, 2002, September 5, 2002 and November 12, 2002. Also, art not cited in the international search report or foreign office actions has been cited in the Information Disclosure Statements of June 29, 2000 and September 5, 2002.

(4) One copy each of the prior art deemed most closely related to the subject matter encompassed by the claims is of record in the form of the art cited in the Information Disclosure Statements filed June 29, 2000, May 13, 2002, September 5, 2002 and November 12, 2002, and in the enclosed Information Disclosure Statement, submitted herewith.

(5) The following is a detailed discussion of the art cited in the above-mentioned Information Disclosure Statements, and comments pointing out how the instant claimed subject matter is patentably distinguishable thereover.

JP 05-083229 cited in the Korean office action of September 17, 2002 discloses a technique for arranging bits with high

importance to bit locations with higher reliability. Transmission section 1 includes a bit arrangement conversion unit that converts bit arrangement of transmission data based on bit reliability and a D/A converter that D/A-converts the data subjected to bit arrangement conversion through the use of a prescribed code. A reception section includes an A/D converter that A/D-converts received data using a prescribed code and a bit allocation inverse conversion unit that restores the data subjected to A/D-conversion to the original bit arrangement through inverse processing to that of the bit arrangement converter.

Ep 0589709A2 cited in the International Search Report under Category X and in the Korean office action of March 28, 2002 discloses transmission data divided in to two or more groups, according to importance. A three group system maps the data streams onto a multi-resolution constellation (QAM or modified PSK) according to a technique wherein the most important data determine the quadrant, the next most important determine which of four subsets is used in the quadrant, and the least important determine which point is used within that subset. Receivers of differing capabilities thus detect as much data as they are able, or a given receiver detects as much data as channel quality allows. The object is to enable a QPSK receiver to detect the most important data, a modified 16QAM receiver to detect the most important and second

most important data, and a modified 64QAM receiver to receive all the data. In OFDM, multi-resolution transmission uses long guard times and wider channel spacing (equivalently, longer symbols) for the more important data.

EP '064 is cited under Category A in the international search report, which cites page 23, line 30 to page 24, line 6 and Fig. 26. In cited Fig. 26, the intermediate frequency carrier or radio frequency carrier is modulated by an obtained instantaneous phase and amplitude at a phase and amplitude modulation unit to output an amplitude and phase modulated intermediate frequency wave or RF wave.

JP '900 cited under Category Y in the international search report discloses a hierarchical transmission bit technique wherein data of different priorities are assigned to bits of different noise resistance characteristics, with higher priority data being assigned to bits of higher noise resistance characteristics. A retransmission control unit outputs a re-control signal, when it receives a retransmission request signal from the reception side. A buffer 11 exchanges the transmission order of the blocks, which is caused by retransmission, in accordance with the re-transmission control signal.

JP '135 discloses sharing a high-order bit of a code subject to A/D conversion as a multi-value signal of an axis with less

degree of multi-value processing and sharing the remaining low-order bits of the code subject to A/D conversion as a multi-value signal for an axis of a degree with much multi-value processing. In particular, the degree of multi-value processing is different for the Q axis (two-value) and for the I axis (4-value). The higher order bit is assigned to the Q axis with less degree of multi-value processing, and the low-order bit is assigned to the I axis with much degree of multi-value processing. Thus, the error rate of the high-order bit tends to be decreased.

The IEEE article is cited in the International Search Report under Category A for a disclosure of detection of multilevel signal formats including a signal space diagram of "superposed modulation" as shown in Fig. 2 and discussed at page 264, col. 1, line 32 et seq.

The CS74-158 article is cited in the International Search Report under Category A for a disclosure of multilevel and multi-value signals citing Fig. 5 which illustrates modulated signal vectors with a synchronous multiplexing modulation system and an asynchronous, arbitrary level multiplexing modulation system.

The Tsubaki article discloses ARQ using OFDM subcarrier information for wireless ATM, with retransmission of part of the erroneous packet data (ATM cell) on a subcarrier by subcarrier basis using measured received level of the OFDM subcarriers.

US6075815 discloses a symbol-energy-to-noise-density estimation in a QPSK modulated communication system which determines the I channel and Q channel components for each received soft value, which determines the location of each soft value with respect to the fade line using the I and Q channel components, and averages these locations over a power control group duration to determine the noise density. The symbol energy is determined by subtracting the average perpendicular distance from the soft value point to the fade line from half the square of the average of the distance from the soft value point to the origin.

By contrast to the disclosures above, Applicants recite in claim 13 a transmission apparatus comprising an input section through which information to be communicated including important information and transmission data other than the important information are input through respective routes; and a modulation section that performs modulation of the important information and the transmission data other than the important information input through the input section to provide a transmission signal, in accordance with a modulation scheme in which one symbol is expressed using three or more bits on an orthogonal coordinate comprising an in-phase component and a quadrature component, wherein the modulation section, upon performing the modulation, places a bit

constituting the important information as one or both of a first bit and a second bit of a symbol of the transmission signal.

Claim 14 defines a reception apparatus comprising an extraction section that extracts important information from one or both of a first bit and a second bit of a reception signal modulated according to a modulation scheme in which one symbol is expressed using three or more bits on an orthogonal coordinate comprising an in-phase component and a quadrature component; an output section that outputs the important information extracted by the extraction section and other reception data through respective routes; and a communication control section that performs a communication control based on the important information output from the output section.

Claim 15 depends from claim 14 and defines the communication control section as comprising a retransmission instructing section that, based on the important information, instructs a transmission end of communication to perform retransmission.

Claim 16 depends from claim 14 and defines the communication control section as comprising a reception control section that, based on the important information, performs a reception control of the reception signal.

Claim 17 defines a base station apparatus comprising the transmission apparatus of claim 13.

Claim 18 defines a transmission method comprising the steps of

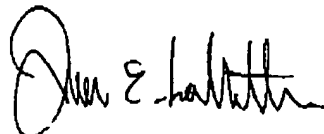
(a) inputting information to be communicated including important information and transmission data other than the important information, through respective routes; and (b) modulating the important information and the transmission data other than the important information input in the input step to provide a transmission signal, in accordance with a modulation scheme in which one symbol is expressed using three or more bits on an orthogonal coordinate comprising an in-phase component and a quadrature component, wherein step (b), upon the modulation, places a bit constituting the important information as one or both of a first bit and a second bit of a symbol of the transmission signal.

Applicants submit that the references discussed herein, considered alone or in combination, fail to disclose or suggest the claimed subject matter of, *inter alia*, upon the modulation, placing a bit constituting the important information as one or both of a first bit and a second bit of a symbol of a transmission signal. Therefore, in light of the foregoing discussion pointing out how the claimed invention distinguishes over these references, Applicants respectfully submit that the inventions of independent claims 13, 14 and 18 and all claims dependent therefrom are not anticipated by these references and would not have been obvious over any combination thereof.



Grant of special status in accordance with this petition is respectfully requested.

Respectfully submitted,



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Date: October 20, 2003

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